

1 ~~2~~ 3. (Amended) A process according to Claim 1 [2] wherein the ether comprises  
2 at least one cyclic ether.

1 ~~3~~ 4. (Amended) A process according to Claim 1 [2] wherein the ether is  
2 tetrahydrofuran.

1 ~~9~~ 10. (Amended) A process according to Claim 1 [wherein the mixture further  
2 includes at least one ether,] wherein the 4,5-benzoindanone is a 2-alkyl-4,5-benzoindanone,  
3 wherein (b) is an alkali metal borohydride and wherein (c) is water or an alcohol.

12. (Amended) A process which comprises [(i)]  
1) mixing together at least one of each of the following: (a) a 4,5-benzoindanone, (b) an  
alkali or alkaline earth metal borohydride or alkali or alkaline earth metal aluminum  
hydride, [and] (c) a hydroxyl-containing compound capable of interacting with (b) to  
serve as a hydrogen source, and (d) at least one ether;  
2) maintaining the resultant mixture under reaction conditions causing a 4,5-benzoindanol  
to be formed; [and (ii)]  
3) terminating the reaction by quenching the reaction mixture with water or an aqueous  
mixture;  
4) extracting the quenched reaction mixture with a liquid hydrocarbon having a higher  
boiling point or a higher initial boiling point than the ether;  
5) distilling at least the ether from the resultant extract; and  
6) catalytically dehydrating said 4,5-benzoindanol using an [a] arylsulfonic acid catalyst  
to thereby form a 4,5-benzoindene.

1 ~~12~~ 13. (Amended) A process according to Claim ~~12~~ <sup>11</sup> [wherein the mixture formed in  
2 (i) further includes at least one ether,] wherein the 4,5-benzoindanone is a 2-alkyl-4,5-benzoin-  
3 danone, wherein (b) is an alkali metal borohydride and wherein (c) is water or an alcohol.

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Cancel Claims 15 and 16 without prejudice or disclaimer.

1417 (Amended) A process according to Claim 12 [wherein the mixture formed in (i) further includes at least one ether,] wherein the 4,5-benzoindanone is a 2-alkyl-4,5-benzoindanone, wherein (b) is an alkali metal borohydride, wherein (c) is water or an alcohol, [wherein the reaction in (i) is terminated by quenching the reaction mixture with water or an aqueous mixture,] wherein the [a separation between the water and organic constituents of the reaction mixture is effected by extracting the quenched reaction mixture with a] liquid hydrocarbon has [having] a higher boiling point or a higher initial boiling point not only than the ether, but, [and,] if present, the alcohol as well, wherein not only said ether but, [and,] if present, said alcohol are distilled off to leave a liquid hydrocarbon solution of the 4,5-benzoindanol [formed in (i)], and wherein the catalytic dehydration [of (ii)] is conducted without isolating the 4,5-benzoindanol from the liquid hydrocarbon solution.

21. (Amended) A process which comprises:

- 1) mixing together at least one of each of the following: (a) a 4,5-benzoindanone, (b) an alkali or alkaline earth metal borohydride or alkali or alkaline earth metal aluminum hydride, [and] (c) a hydroxyl-containing compound capable of interacting with (b) to serve as a hydrogen source, and (d) at least one ether;
- 2) maintaining the resultant mixture under reaction conditions causing a 4,5-benzoindanol to be formed; [2)]
- 3) terminating the reaction by quenching the reaction mixture with water or an aqueous mixture;
- 4) extracting the quenched reaction mixture with a liquid hydrocarbon having a higher boiling point or a higher initial boiling point than the ether;
- 5) distilling at least the ether from the resultant extract;
- 6) catalytically dehydrating said 4,5-benzoindanol using an [a] arylsulfonic acid catalyst to thereby form a 4,5-benzoindene; and [3)]
- 7) deprotonating said 4,5-benzoindene with a strong base and reacting the resultant deprotonated intermediate with a reactant which in its original condition can be depicted by the formula  $R^{11}R^{12}M^1X_2$  where  $R^{11}$  and  $R^{12}$  are the same or different and each is (i) a hydrocarbyl group containing up to about 18 carbon atoms or (ii) a hydrocarbyl(oxyalkylene) or hydrocarbylpoly(oxyalkylene) group containing up to about

A<sup>4</sup> concluded

100 carbon atoms; M<sup>1</sup> is a silicon, germanium or tin atom; and X is a halogen atom; such that a silicon-, germanium- or tin-bridged complex of the 4,5-benzoindene is formed.

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20~~25~~. (Amended) A process according to Claim 19~~22~~ [wherein the mixture formed in 1) further includes at least one ether,] wherein the 4,5-benzoindanone is a 2-alkyl-4,5-benzoin-danone, wherein (b) is an alkali metal borohydride and wherein (c) is water or an alcohol.

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22~~27~~. (Amended) A process according to Claim 19~~22~~ [wherein the mixture formed in 1) further includes at least one ether,] wherein the 4,5-benzoindanone is a 2-alkyl-4,5-benzoin-danone, wherein (b) is an alkali metal borohydride, wherein (c) is water or an alcohol, [wherein the reaction in 1) is terminated by quenching the reaction mixture with water or an aqueous mixture,] wherein [a separation between the water and organic constituents of the reaction mixture is effected by extracting the quenched reaction mixture with a] the liquid hydrocarbon has [having] a higher boiling point or a higher initial boiling point not only than the ether, but, [and,] if present, the alcohol as well, wherein not only said ether but, [and,] if present, said alcohol are distilled off to leave a liquid hydrocarbon solution of the 4,5-benzoin-danol [formed in 1)], and wherein the catalytic dehydration [of 2)] is conducted without isolating the 4,5-benzoindanol from the liquid hydrocarbon solution.

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31. (Amended) A process which comprises:

- 1) mixing together at least one of each of the following: (a) a 4,5-benzoindanone, (b) an alkali or alkaline earth metal borohydride or alkali or alkaline earth metal aluminum hydride, [and] (c) a hydroxyl-containing compound capable of interacting with (b) to serve as a hydrogen source, and (d) at least one ether;
- 2) maintaining the resultant mixture under reaction conditions causing a 4,5-benzoindanol to be formed; [2)]
- 3) terminating the reaction by quenching the reaction mixture with water or an aqueous mixture;

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- 10 4) extracting the quenched reaction mixture with a liquid hydrocarbon having a higher  
11 boiling point or a higher initial boiling point than the ether;  
12 5) distilling at least the ether from the resultant extract;  
13 6) catalytically dehydrating said 4,5-benzoindanol using an [a] arylsulfonic acid catalyst  
14 to thereby form a 4,5-benzoindene; [3]]  
15 7) deprotonating said 4,5-benzoindene with a strong base and reacting the resultant  
16 deprotonated intermediate with a reactant which in its original condition can be depicted  
17 by the formula  $R^{11}R^{12}M^1X_2$  where  $R^{11}$  and  $R^{12}$  are the same or different and each is (i)  
18 a hydrocarbyl group containing up to about 18 carbon atoms or (ii) a  
19 hydrocarbyl(oxyalkylene) or hydrocarbylpoly(oxyalkylene) group containing up to about  
20 100 carbon atoms;  $M^1$  is a silicon, germanium or tin atom; and X is a halogen atom;  
21 such that a silicon-, germanium- or tin-bridged complex of the 4,5-benzoindene is  
22 formed; and [4]]  
23 8) deprotonating said bridged complex with a strong base and reacting the resultant  
24 deprotonated intermediate with a Group IV, V, or VI metal tetrahalide to thereby form  
25 a silicon-, germanium- or tin-bridged Group IV, V, or VI metal-containing metallocene  
26 complex.

28<sup>33</sup> (Amended) A process according to Claim <sup>27</sup>32 [wherein the mixture formed in  
1 1) further includes at least one ether,] wherein the 4,5-benzoindanone is a 2-alkyl-4,5-benzoin-  
2 danone, wherein (b) is an alkali metal borohydride, wherein (c) is water or an alcohol, and  
3 wherein the zirconium tetrahalide is zirconium tetrachloride or zirconium tetrabromide.  
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30<sup>36</sup> (Amended) A process according to Claim <sup>27</sup>32 [35] wherein the liquid  
1 hydrocarbon is [separation of 4,5-benzoindanol from the ether and water is effected by  
2 extracting the quenched reaction mixture with] a liquid aromatic hydrocarbon, [having a higher  
3 boiling point or a higher initial boiling point than the ether, and distilling at least the ether  
4 from the resultant extract.]  
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*A<sup>11</sup> concluded*

31<sup>37</sup> (Amended) A process according to Claim 32<sup>37</sup> [wherein the mixture formed in 1) further includes at least one ether,] wherein the 4,5-benzoin-danone, wherein (b) is an alkali metal borohydride, wherein (c) is water or an alcohol, [wherein the reaction in 1) is terminated by quenching the reaction mixture with water or an aqueous mixture, wherein a separation between the water and organic constituents of the reaction mixture is effected by extracting the quenched reaction mixture with a] wherein the liquid hydrocarbon has [having] a higher boiling point or a higher initial boiling point not only than the ether, but also, [and,] if present, the alcohol, wherein said ether and, if present, said alcohol are distilled off, [to leave a liquid hydrocarbon solution of the 4,5-benzoin-danol formed in 1),] and wherein the catalytic dehydration [of 2)] is conducted without isolating the 4,5-benzoin-danol from the liquid hydrocarbon solution.

34<sup>40</sup> (Amended) A process according to Claim 31<sup>26</sup> wherein each of the respective strong bases [base] used in 7) [3)] and in 8) [4)] is a lithium alkyl.

*A<sup>12</sup>*

35<sup>41</sup> (Amended) A process [which comprises] according to Claim 31<sup>26</sup> wherein the deprotonating of the [a] 4,5-benzoin-dene with a strong base and the reacting of the resultant deprotonated intermediate are conducted while the 4,5-benzoin-dene and the resultant deprotonated intermediate, respectively, are dissolved in a liquid lower dialkyl ether, [with a reactant which in its original condition can be depicted by the formula  $R^{11}R^{12}M^1X_2$  where  $R^{11}$  and  $R^{12}$  are the same or different and each is (i) a hydrocarbyl group containing up to about 18 carbon atoms or (ii) a hydrocarbyl(oxyalkylene) or hydrocarbylpoly(oxyalkylene) group containing up to about 100 carbon atoms;  $M^1$  is a silicon, germanium or tin atom; and X is a halogen atom; such that a slurry of a silicon-, germanium- or tin-bridged complex of the 4,5-benzoin-dene is formed, and separating the solids from the liquid phase by filtration, centrifugation or decantation.]

36<sup>42</sup> (Amended) A process according to Claim 41<sup>35</sup> wherein the 4,5-benzoin-dene is a 2-alkyl-4,5-benzoin-dene, wherein each of the respective strong bases [base] used in 7) and in 8) is a lithium alkyl, and wherein said reactant is a dialkyldihalosilane.

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A<sup>12</sup>  
concluded

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43. (Amended)

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A process according to Claim 42 [41 wherein the 4,5-benzoindene is a 2-alkyl-4,5-benzoindene, and] wherein [said reactant is a dialkyldihalosilane in which] the alkyl groups of the dialkyldihalosilane contain no more than 4 carbon atoms each.

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45. (Amended)

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A process according to Claim 41 wherein the 4,5-benzoindene is 2-methyl-4,5-benzoindene, wherein each of the respective strong bases [base] used in 7) and in 8) is butyllithium, wherein said ether is diethyl ether, wherein said reactant is dichlorodimethylsilane, and wherein said solids are separated from the liquid phase by filtration.

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46. (Amended)

A process [according to Claim 31 which further comprises] which comprises:

- 1) mixing together at least one of each of the following: (a) a 4,5-benzoindanone, (b) an alkali or alkaline earth metal borohydride or alkali or alkaline earth metal aluminum hydride, and (c) a hydroxyl-containing compound capable of interacting with (b) to serve as a hydrogen source, under reaction conditions causing a 4,5-benzoindanol to be formed;
- 2) catalytically dehydrating said 4,5-benzoindanol using a arylsulfonic acid catalyst to thereby form a 4,5-benzoindene;
- 3) deprotonating said 4,5-benzoindene with a strong base and reacting the resultant deprotonated intermediate with a reactant which in its original condition can be depicted by the formula  $R^{11}R^{12}M^1X_2$  where  $R^{11}$  and  $R^{12}$  are the same or different and each is (i) a hydrocarbyl group containing up to about 18 carbon atoms or (ii) a hydrocarbyl(oxyalkylene) or hydrocarbylpoly(oxyalkylene) group containing up to about 100 carbon atoms;  $M^1$  is a silicon, germanium or tin atom; and X is a halogen atom; such that a silicon-, germanium- or tin-bridged complex of the 4,5-benzoindene is formed;
- 4) deprotonating said bridged complex with a strong base and reacting the resultant deprotonated intermediate with a Group IV, V, or VI metal tetrahalide to thereby form

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